



U.S. Environmental Protection Agency
Office of Waste Programs Enforcement
Contract No. 68-W9-0006

TES 9

**Technical Enforcement Support
at Hazardous Waste Sites
Zone III
Regions 5,6, and 7**



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**PRELIMINARY ASSESSMENT/
VISUAL SITE INSPECTION**

**BASF CORPORATION
TROY FACILITY
TROY, MICHIGAN 48084
MID 057 007 478**

FINAL REPORT

Prepared for

**U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Waste Programs Enforcement
Washington, DC 20460**

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TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
EXECUTIVE SUMMARY	ES-1
1.0 INTRODUCTION	1
2.0 FACILITY DESCRIPTION	4
2.1 FACILITY LOCATION	4
2.2 FACILITY OPERATIONS	4
2.3 WASTE GENERATING PROCESSES	7
2.4 HISTORY OF DOCUMENTED RELEASES	11
2.5 REGULATORY HISTORY	11
2.6 ENVIRONMENTAL SETTING	12
2.6.1 Climate	12
2.6.2 Flood Plain and Surface Water	13
2.6.3 Geology and Soils	13
2.6.4 Ground Water	13
2.7 RECEPTORS	16
3.0 SOLID WASTE MANAGEMENT UNITS	18
4.0 AREAS OF CONCERN	21
5.0 CONCLUSIONS AND RECOMMENDATIONS	22
REFERENCES	24

Attachments

A	VISUAL SITE INSPECTION SUMMARY AND PHOTOGRAPHS
B	VISUAL SITE INSPECTION FIELD NOTES

TABLE OF CONTENTS (continued)

LIST OF TABLES

<u>Table</u>		<u>Page</u>
1	SOLID WASTE MANAGEMENT UNITS (SWMU)	8
2	SOLID WASTES	9
3	SWMU SUMMARY	23

LIST OF FIGURES

<u>Figure</u>		<u>Page</u>
1	Facility Location	5
2	Facility Layout	6
3	Distribution of Permeable Surface Deposits in Southeast Michigan	14
4	Representative Geologic Cross-Section of the Troy Area	15
5	Superficial Glacial Features of the Troy Area	17
6	Description of SWMU 2	19

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EXECUTIVE SUMMARY

PRC Environmental Management, Inc. (PRC) performed a preliminary assessment and visual site inspection (PA/VSI) to identify and assess the existence and likelihood of releases from solid waste management units (SWMU) and other areas of concern (AOC) at the BASF Corporation Troy facility (BASF Troy) in Troy, Michigan. This report summarizes the results of the PA/VSI and evaluates the potential for releases of hazardous wastes or hazardous constituents from SWMUs.

The BASF Troy facility manufactured polyether polyol resins and urethane systems for automotive, appliance, and shoe-sole manufacturing industries and for the construction industry. The 1.7-acre facility is located in Troy, Michigan, 14 miles north of Detroit. The BASF Troy facility began operations in 1965. It was owned by North American Urethane until it was acquired by BASF in 1971.

The BASF Troy facility ceased operation in 1986 and went through closure as an interim status RCRA treatment, storage, or disposal facility in 1988. While the facility was in operation, it generated small quantities of resin wastes, spent isocyanates, and toluene diisocyanate from its resin and urethane foam manufacturing processes. It also generated spent methylene chloride from cleaning equipment. The facility has been vacant since 1986. BASF Troy no longer generates wastes at the site.

The PA/VSI identified the following two SWMUs at the BASF Troy facility:

Solid Waste Management Units

1. Satellite Accumulation Areas
2. Hazardous Waste Drum Storage Area

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No AOCs were identified at the BASF Troy facility.

The potential for a release of hazardous constituents to ground water, surface water, air, or on-site soils from this facility is low. Both SWMUs were closed in 1988; BASF Troy no longer manages wastes at the facility. At the time of closure, soil sampling was conducted under and near SWMU 1; no contamination was found. While in operation, each SWMU had adequate

secondary containment. No releases of hazardous constituents to environmental media were identified.

Ground water in the Troy area is not used as a public water supply. The city of Troy is supplied with water by the city of Detroit municipal water supply system, which draws its water from the Detroit River.

Surface water drains from the facility to the municipal sewer system. There is a small pond approximately 0.5 mile northwest of the facility. There are no known tributaries in the area and the topography slopes uphill towards the pond. The River Rouge is located approximately 2.5 miles west of the facility.

Receptors of potential releases from the BASF Troy facility include former BASF personnel and residents of the Troy area. Residents lie within 0.25 mile of the facility. The facility has been inactive since 1986. Access to the facility is controlled by a locked fence. No sensitive environments were identified in the area of the facility.

Because of the low potential for any release of hazardous constituents from the facility, PRC recommends no further action at this time.

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1.0 INTRODUCTION

PRC Environmental Management, Inc. (PRC) received Work Assignment No. R05032 from the U.S. Environmental Protection Agency (EPA) under Contract No. 68-W9-0006 (TES 9) to conduct preliminary assessments (PA) and visual site inspections (VSI) of hazardous waste treatment and storage facilities in Region 5.

As part of the EPA Region 5 Environmental Priorities Initiative, the Resource Conservation and Recovery Act (RCRA) and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) programs are working together to identify and address RCRA facilities that have a high priority for corrective action using applicable RCRA and CERCLA authorities. The PA/VSI is the first step in the process of prioritizing facilities for corrective action. Through the PA/VSI process, enough information is obtained to characterize a facility's actual or potential release(s) to the environment from solid waste management units (SWMU) and areas of concern (AOC).

A SWMU is defined as any discernible unit at a RCRA facility in which solid wastes have been placed and from which hazardous constituents might migrate, regardless of whether the unit was intended to manage solid or hazardous waste.

The SWMU definition includes the following:

- RCRA-regulated units, such as container storage areas, tanks, surface impoundments, waste piles, land treatment units, landfills, incinerators, and underground injection wells.
- Closed and abandoned units.
- Recycling units, wastewater treatment units, and other units that EPA has generally exempted from standards applicable to hazardous waste management units.
- Areas contaminated by routine and systematic releases of wastes or hazardous constituents. Such areas might include a wood preservative drippage area, a loading-unloading area, or an area where solvent used to wash large parts has continually dripped onto soils.

An AOC is defined as any area where a release to the environment of hazardous waste or hazardous constituents has occurred or is suspected to have occurred on a nonroutine and

nonsystematic basis. This includes any area where such a release in the future is judged to be a strong possibility.

The purpose of the PA is as follows:

- Identify SWMUs and AOCs at the facility.
- Obtain information on the operational history of the facility.
- Obtain information on releases from any units at the facility.
- Identify data gaps and other informational needs to be filled during the VSI.

The PA generally includes review of all relevant documents and files located at state offices and at the EPA Region 5 office in Chicago.

The purpose of the VSI is as follows:

- Identify SWMUs and AOCs not discovered during the PA.
- Identify releases not discovered during the PA.
- Provide a specific description of the environmental setting.
- Provide information on release pathways and the potential for releases to each medium.
- Confirm information obtained during the PA regarding operations, SWMUs, AOCs, and releases.

The VSI includes interviewing appropriate facility staff, inspecting the entire facility to identify all SWMUs and AOCs, photographing all SWMUs, identifying evidence of releases, initially identifying potential sampling locations, and obtaining all information necessary to complete the PA/VSI report.

This report documents the results of a PA/VSI of the BASF Corporation Troy facility (BASF Troy) in Troy, Michigan. The PA was completed on October 15, 1991. PRC gathered and reviewed information from the Michigan Department of Natural Resources (MDNR) and from EPA Region 5 RCRA files. The VSI was conducted on November 5, 1991. It included interviews

with BASF Troy facility representatives and a walk-through inspection of the facility. Two SWMUs were identified at the facility; no AOCs were identified.

The VSI is summarized and two inspection photographs are included in Attachment A. Field notes from the VSI are included in Attachment B.

2.0 FACILITY DESCRIPTION

This section describes the facility's location, past and present operations (including waste management practices), waste generating processes, history of documented releases, regulatory history, environmental setting, and receptors.

2.1 FACILITY LOCATION

The BASF Troy, Michigan facility of BASF Wyandotte Corporation (BASF) is located at 1700 Blaney Drive in Troy, Michigan (latitude: 42°32'55" N and longitude: 83°10'05" W) as shown in Figure 1. The city of Troy is approximately 14 miles north of Detroit. The facility occupies approximately 1.7 acres in a mixed industrial and residential area (BASF, 1988a).

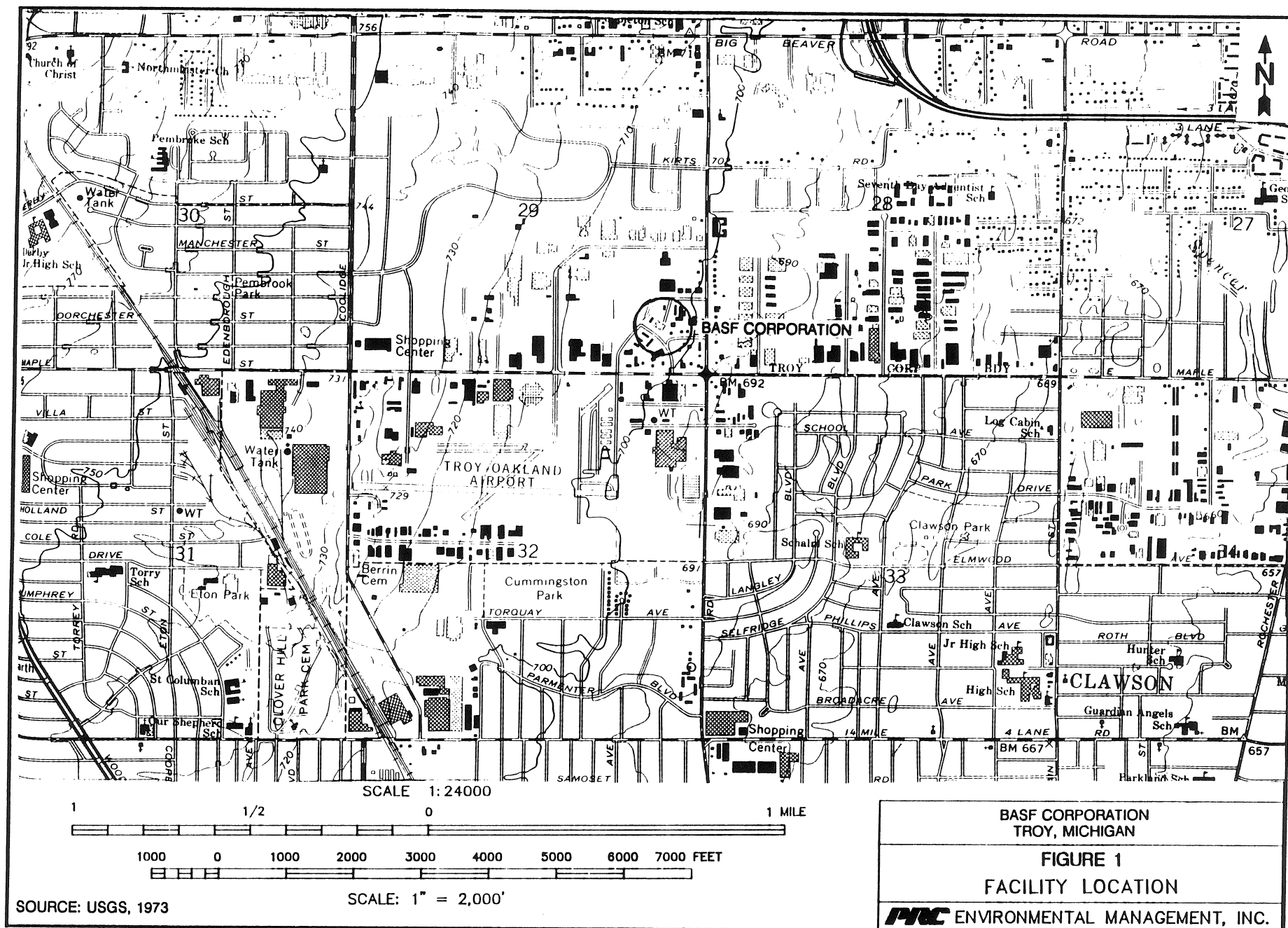
The facility is bounded on the north by Lemacs Dry Cleaning facility, on the west by a road and a storm water retention pond, on the south by Blaney Drive, and on the east by a small, unidentified building. A parking lot on the east was used as a loading dock, which was surrounded by 5-inch berm (PRC, 1991). Most of the site is paved.

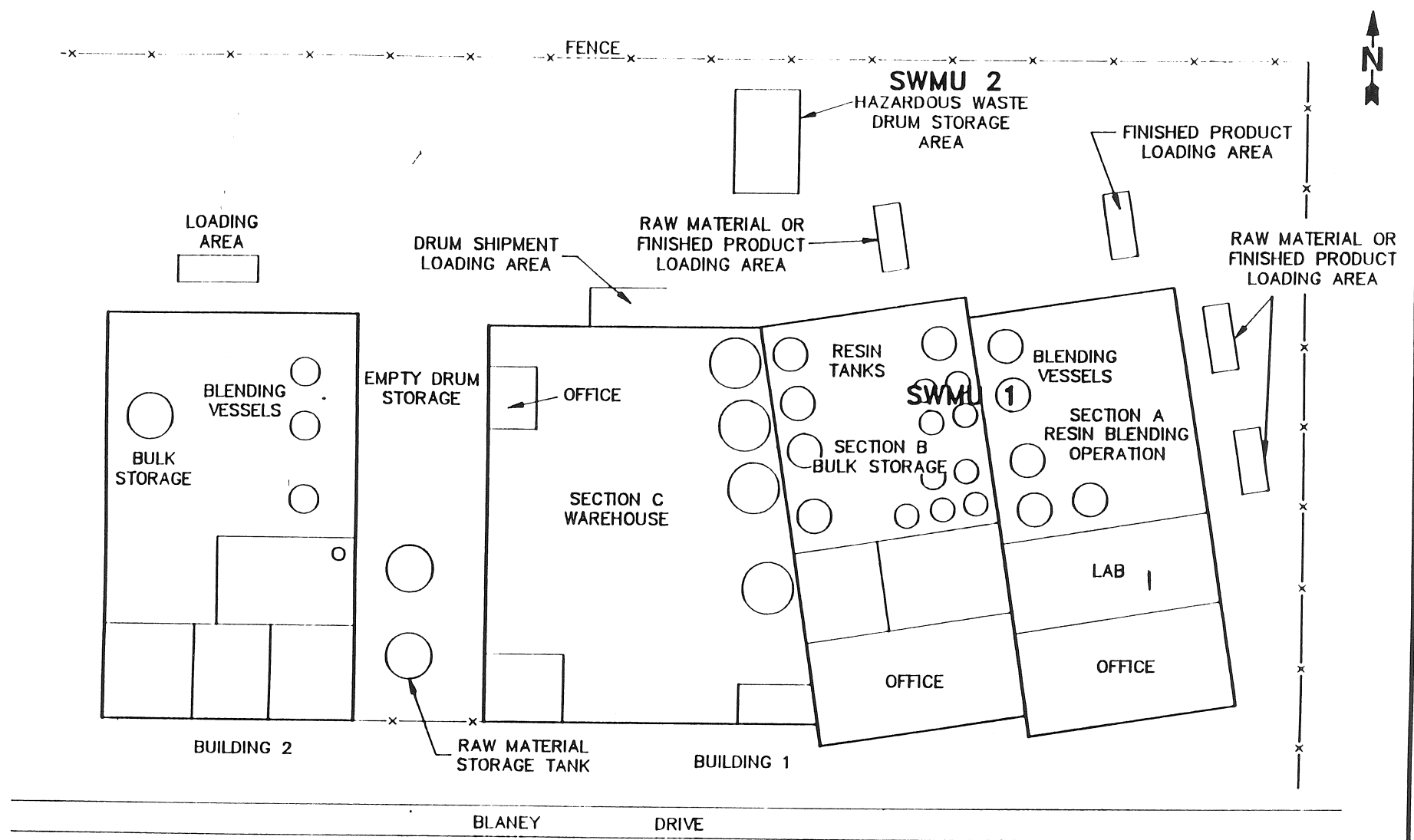
2.2 FACILITY OPERATIONS

The facility manufactured polyether polyol resins and urethane systems for automotive, appliance, and shoe-sole manufacturing industries and for the construction industry (BASF, 1988a). The site had existed since 1965 (BASF, 1980a) and was acquired by BASF Troy in 1971 for manufacturing urethane foams. The facility previously was owned by North American Urethane Company (Roberts, 1991). The BASF Troy facility closed in 1986 and the operations were moved to the Livonia plant in 1987 (PRC, 1991). The facility has been vacant since 1986 and currently is offered for sale. While it was in operation, the BASF Troy facility had approximately 26 full-time employees (BASF, 1988a).

The facility consisted of two buildings. Building 1 was divided into three sections: section A, a resin-blending operation; section B, a bulk storage area; and section C, a warehouse. Building 2 housed the manufacturing operation. See Figure 2 for the facility layout.

The BASF Troy facility formulated, blended, packaged, and shipped cellular and non-cellular urethane systems. Resins and urethane foams were produced using raw materials and





SOURCE: MODIFIED FROM BASF SKETCH, 1988

NOT TO SCALE

BASF-TROY FACILITY TROY, MICHIGAN
FIGURE 2 FACILITY LAYOUT
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toluene diisocyanate (TDI) in blending vessels in Building 1. The blending operation was carried out in seven vessels with volumes ranging from 1,000 to 4,000 gallons. The blending operation required that the tanks be heated. The tanks were heated by a completely closed hot-oil system, insulated by a jacket surrounding the tank through which heated oil was pumped continuously. After the tanks were heated, hot oil was cooled on a pad on the east side of building 2. Inside building 2, hot oil was stored in a 500-gallon tank. The finished product was packaged in 55-gallon drums (PRC, 1991). Finished products were stored in Section C inside building 1 and were shipped out from the finished products loading area in the northeast corner of the facility (Hoermann, 1992).

Hazardous wastes generated during blending processes for resins and urethane production were collected in 55-gallon drums located next to each blending vessel. BASF Troy transferred full 55-gallon drums from these satellite accumulation areas (SWMU 1) to a hazardous waste drum storage area (SWMU 2) for storage before shipment off-site (PRC, 1991). In addition, waste polyol was collected in 55-gallon drums and disposed of off site by City Disposal (MDNR, 1983). Table 1 lists the SWMUs identified at BASF Troy and the current status of each.

After the facility ceased operations in 1986, the site was vacated by 1987. On September 16, 1988, BASF Troy hired Clayton Environmental Consultants, Inc. (CEC) to close the drum storage pad area. Clean closure of the pad was completed by CEC on December 20, 1988 (CEC, 1988a). MDNR approved the facility's closure of the hazardous waste drum storage area on February 23, 1989 (MDNR 1989b). Generation and storage of regulated hazardous wastes at the Troy site ceased in 1986.

2.3 WASTE GENERATING PROCESSES

The primary waste streams generated at the BASF Troy facility were, toluene diisocyanate (U223), polyol wastes, spent methylene chloride (F002) and rinsate wastewater. These wastes were generated during the production of urethane foam and resin, normal cleaning of equipment, and cleaning for closure activity. Wastes generated at the facility are discussed below and are summarized in Table 2.

The urethane system production consisted of blending and heating processes. These processes generated waste toluene diisocyanate (U223). These wastes were accumulated in 55-gallon drums in SWMU 1, the satellite accumulation areas. The full drums were transferred to

TABLE 1
SOLID WASTE MANAGEMENT UNITS (SWMU)

SWMU Number	SWMU Name	RCRA Hazardous Waste Management Unit*	Status
1	Satellite Accumulation Area	No	Inactive
2	Hazardous Waste Drum Storage Area	Yes	Clean closed in 1989

* A RCRA hazardous waste management unit is one that currently requires or formerly required submittal of a RCRA Part A or Part B permit application.

TABLE 2
SOLID WASTES

Waste/EPA Waste Code	Source	Primary Management Unit*
Toluene diisocyanate/U223	Urethane system production	SWMU 1 and 2
Nonhazardous polyol/NA**	Resin production	SWMU 1 and 2
Spent methylene chloride/F002	Process equipment cleaning	SWMU 1 and 2
Rinsate wastewater/NA	Cleaning operation for closure activity	None***

* Primary management unit refers to a SWMU that currently manages or formerly managed the waste.

** Nonapplicable (NA) designates nonhazardous waste.

*** The Troy facility received approval from the Detroit Water and Sewage Department to discharge the rinsate wastewater to the sewer system.

SWMU 2, the hazardous waste drum storage area, before they were transported to an incineration facility to be used as fuel.

Similarly, the resin production consisted of blending and heating processes. These processes generated nonhazardous waste polyol. This waste was collected in 55-gallon drums and sent to an off-site facility to be used as fuel (Hoermann, 1992).

Cleaning of equipment for the urethane system and the resin production processes generated spent methylene chloride (F002). This waste was accumulated in 55-gallon drums in SWMU 1 and transferred to SWMU 2. This waste also was transported off site to an incineration facility to be used as fuel (MDNR, 1983).

BASF Troy typically stored the accumulated drums of hazardous waste in SWMU 1 and systematically transported them off site to an incineration facility to be used as fuel. When that off site facility was closed, however, sixteen 55-gallon drums of hazardous waste were allowed to accumulate on the site over a 10-month period. In response to this accumulation, BASF Troy planned to incinerate the waste at another off-site facility (MDNR, 1983). The maximum amount of hazardous wastes stored before closure was one hundred 55-gallon drums (BASF, 1988a). No drums were stored at the time of closure, and the hazardous waste drum storage area has not been used since 1986.

BASF Troy contracted CEC to perform closure of the drum storage area. Soil analysis, conducted by CEC as part of the closure revealed that concentration levels of hazardous constituents in the soil underneath the pad were under limits of detection. CEC hired a subcontractor, Great Lakes Environmental Services (GLES), to clean the pad. A solution consisting of 5 percent ammonia, 5 percent detergent, and 90 percent water was used to decontaminate the pad. Four 55-gallon drums of rinsate wastewater were collected during the cleaning of the pad. Analysis of the rinsate wastewater indicated that neither toluene diamine (TDA), a degradation product of TDI, nor methylene chloride was present (BASF, 1988a). The Detroit Water and Sewage Department approved discharging the rinsate into the sewer system on December 16, 1988 (Detroit Water and Sewer Department [DWSD], 1988). Generation and storage of regulated hazardous wastes at the Troy site ceased in 1986. The facility completed clean closure of the drum storage area in 1989.

2.4 HISTORY OF DOCUMENTED RELEASES

No documented releases of hazardous wastes or hazardous constituents from the SWMUs or from other activities at the facility were identified.

2.5 REGULATORY HISTORY

On November 17, 1980, the BASF Troy facility submitted a RCRA Part A permit application which identified the facility as a hazardous waste generator and storage facility (BASF, 1980a). The facility also submitted a closure plan with the Part A application. At the request of MDNR, BASF Troy revised the closure plan in March 1983 and again in April 1985 (BASF, 1985).

On November 6, 1986, BASF Troy notified U.S. EPA Region 5 and MDNR of its intention to close the BASF Troy facility (BASF, 1988 a and b). The company revised its closure plan again in April 1988 at MDNR's request. On August 12, 1988, MDNR approved the closure plan, attaching a "Stipulation for Closure Plan Approval." The stipulation included specific methods to be used for analysis of samples collected during closure, specific sampling procedures to follow during closure, specific decontamination procedures to be used during closure, a requirement that BASF Troy notify MDNR before soil sampling and excavation took place, and requirements that BASF Troy submit certification of closure to MDNR (MDNR, 1988a).

On September 17, 1988, BASF Troy hired CEC to perform closure of the hazardous waste drum storage area. While the facility conducted the closure activities, MDNR personnel performed an inspection of the facility on October 17, 1988. There is no indication in the files that MDNR noted any violations during that inspection. On December 16, 1988, BASF Troy received approval from the Detroit Water and Sewerage Department to discharge to the sewer system the rinse water resulting from the cleaning of the hazardous waste drum storage area (DWSD, 1988). On December 22, 1988, CEC sent a closure certification for the hazardous waste drum storage area to MDNR.

On January 19, 1989, MDNR sent a letter to BASF Troy requesting that BASF Troy submit a sealed closure certification statement from the independent registered professional engineer responsible for certifying the closure and a separate closure certification statement from BASF Troy Corporation. The letter also requested an explanation of the difference between

methylene chloride limits of detection (LOD) of the analytical methods (Method 8240) described in the 2nd and 3rd editions of the Environmental Protection Agency's Publication SW-846, as well as an explanation of the difference between the LODs for the quality control blank and the soil samples (MDNR, 1989a). CEC provided the information requested on January 30, 1990 (CEC, 1989a). On February 23, 1989, MDNR approved the facility's closure of the hazardous waste drum storage area and notified BASF Troy of its release from financial assurance requirements under R299.9601(3), Michigan state code, and 40 CFR 265.143(i) (MDNR, 1989 b).

2.6 ENVIRONMENTAL SETTING

This section describes the climate, flood plain and surface water, geology and soils, and ground water in the vicinity of the BASF Troy facility.

2.6.1 Climate

The climate in Detroit and its surrounding area is characterized by evenly distributed precipitation throughout the year. The average annual precipitation is about 30 to 33 inches. Average monthly temperatures range from a high of 72 degrees Fahrenheit (°F) in July to a low of 23°F in January. Weather in the vicinity is controlled by: (1) location with respect to major storm tracks, and (2) proximity to, and influence of, the Great Lakes. Typical winter storms bring periods of rain or snow. Summer storms usually pass to the north and often are associated with brief showers and sometimes thunder showers with high winds. The Great Lakes mitigate most climatic extremes (Erickson, 1990). The average annual net precipitation in the Detroit area is in the range of 5 to 15 inches (*Federal Register*, 1990).

Due to the topography of the area, moist air from the northwest dries before it reaches the Detroit area. For example, summer showers commonly coming from the northwest often dissipate before reaching Detroit. In the winter, northwesterly winds bring snow to all of Michigan but rarely in accumulations of measurable depth in the Detroit area. Southeasterly winds generally contain more moisture. In any season, the area's heaviest precipitation is brought on by southeasterly winds. A one year, 24-hour rainfall for this area is about 2 inches (NOAA, 1980).

2.6.2 Flood Plain and Surface Water

Surface water collects on the paved areas of the facility and discharges to storm drains which lead to the municipal sewer treatment system (Hoermann, 1992). The closest body of water to the BASF Troy facility is the River Rouge, located approximately 2 1/2 miles west of the site. There also is a small, intermittent stream approximately 1 mile northeast of the facility. The BASF Troy facility is not located in a 100-year flood plain (U.S. Geological Survey [USGS], 1974).

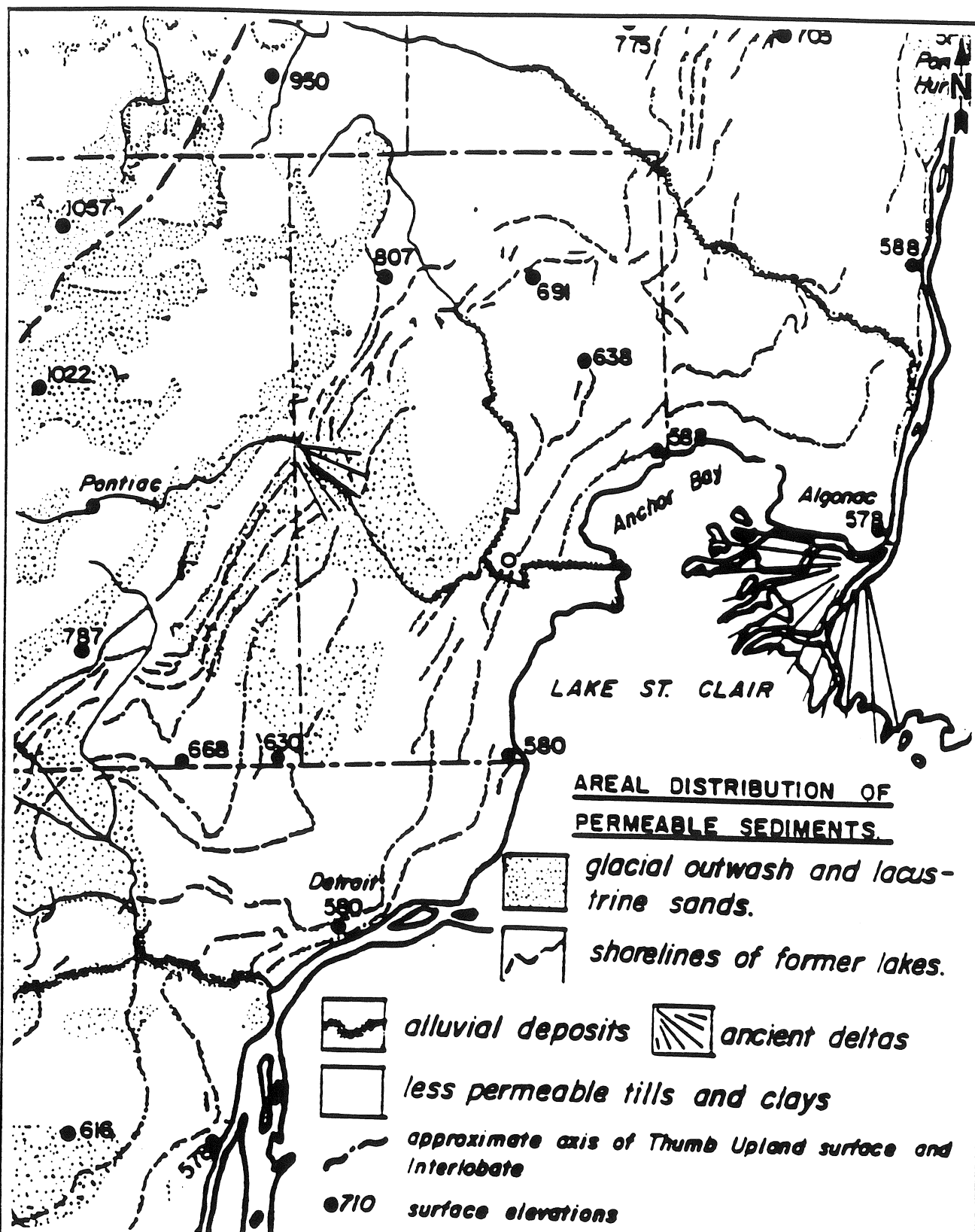
2.6.3 Geology and Soils

The surface geology of the Troy area is characterized by a mosaic of glacial and organic deposits. Present land forms are the result of Pleistocene Epoch glaciation and subsequent deposition and erosion. Primarily, the present land forms consist of materials deposited during the Cary substage of the Wisconsin Glacial stage. Glacial deposits over bedrock range in thickness from 150 to 200 feet in this area. These deposits consist mainly of layers of glacial till of varying thickness and a thick sequence of lacustrine clays and silts. The distribution of permeable surface deposits in southeast Michigan is illustrated in Figure 3.

2.6.4 Ground Water

No site-specific information pertaining to ground water was available during the PA/VSI; however, a description of ground-water conditions based on regional information is included below.

Ground water occurs beneath the site in water-table conditions, with static water levels 75 to 100 feet beneath ground surface, and generally flows toward the Detroit River. However, because Troy is located on a glacial lake plain, composed primarily of silts and clays, the area is not favorable for the development of wells with moderate-to-large yields. Storage capacities are limited and well failures can be expected during prolonged droughts (USGS, 1989). Although the lake plain has a high frequency of dry holes, small domestic supplies, within intermittent zones of relatively greater permeability than the surrounding clay and silt deposits, are normally possible (Figure 4). These intermittent zones occur under confined conditions, and both flowing and non-flowing wells can be expected. Southeast of the junction of the lake plain with the glacial



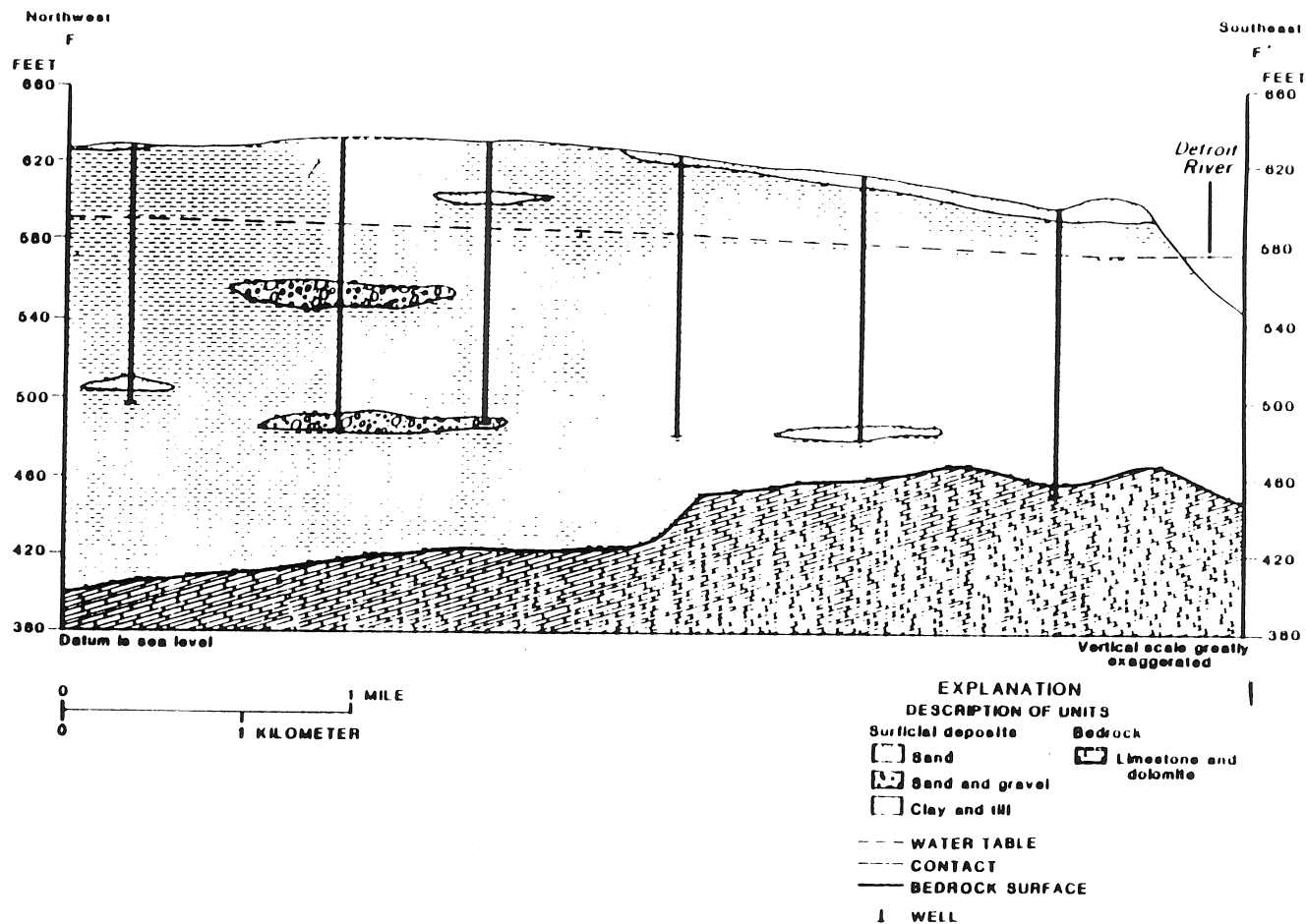
SCALE NOT AVAILABLE

SOURCE: MOZOLA, 1969

BASF CORPORATION
TROY, MICHIGAN

FIGURE 3
DISTRIBUTION OF PERMEABLE SURFACE
DEPOSITS IN SOUTHEAST MICHIGAN

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BASF CORPORATION
TROY, MICHIGAN

FIGURE 4
REPRESENTATIVE GEOLOGIC CROSS-SECTION
OF THE DETROIT AREA

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moraines (Figure 5), the frequency of occurrence, thickness, and extent of these confined groundwater bearing zones decreases in the direction of the Detroit River.

Although the silt and clay deposits beneath the site have limited ability to yield usable quantities of water, the shallow ground water is usually soft and potable unless contaminated by man. In the intermittent zones described above, mineralization increases with depth. The quality of water from deep, confined zones often is impaired by chlorides, hydrogen sulfide, and methane gas (Mozola, 1969).

2.7 RECEPTORS

The BASF Troy facility occupies 1.7 acres in a mixed industrial and residential area in Troy, Michigan. Troy has a population of about 82,000.

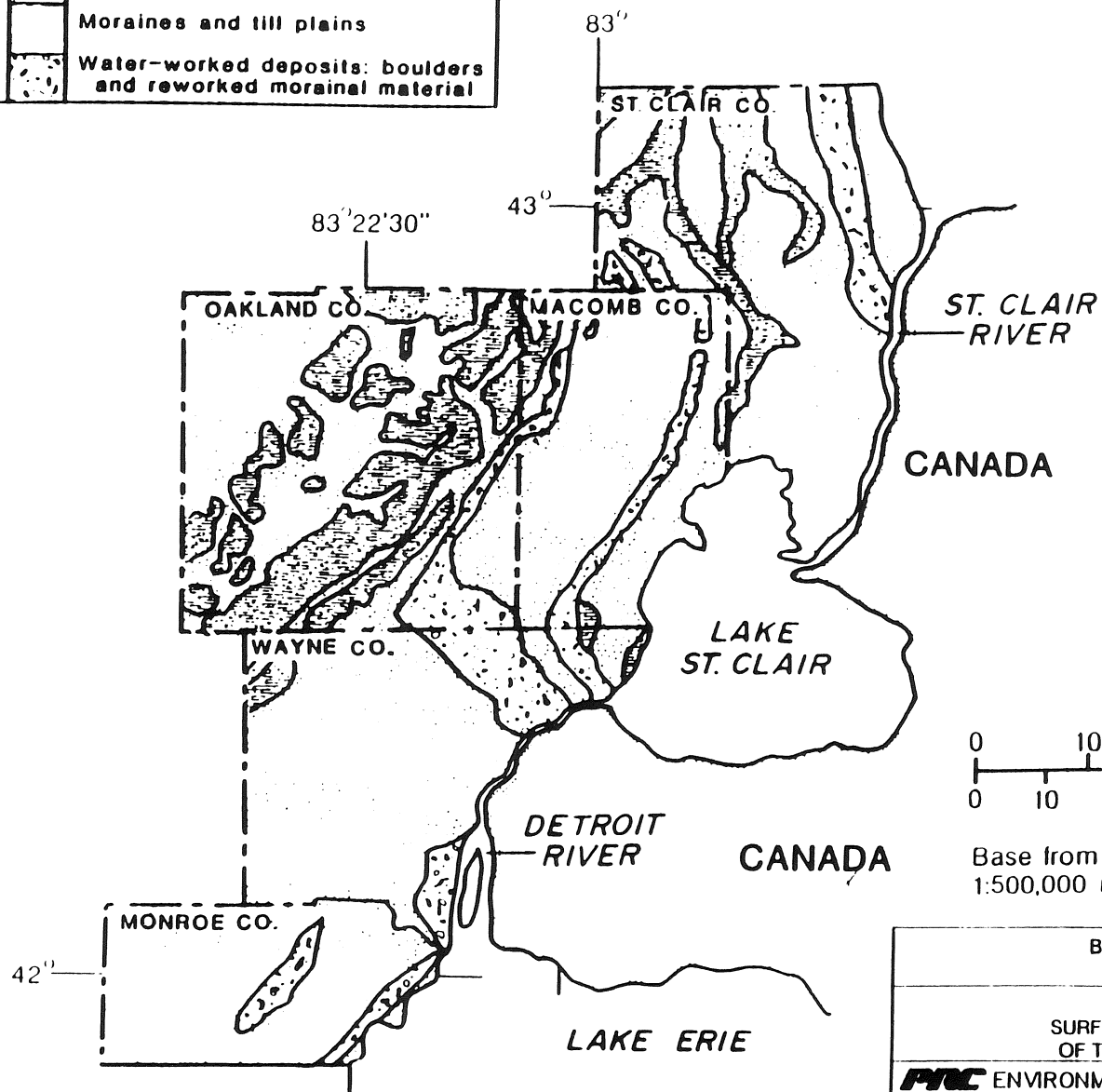
The BASF Troy facility is bordered on the north by the Lemacs Dry Cleaning facility, on the west by a road and a stormwater retention pond, on the south by Blaney Drive, and on the east by a small, unidentified building. The nearest residential area is located about 0.25 mile southeast of the facility. The nearest school, Seventh Day Adventist School, is located about 1 mile northeast of the facility. Access to the facility is controlled by a locked fence. No sensitive environments such as wetlands were identified within 2 miles of the facility.

There is a small pond approximately 0.5 mile northwest of the BASF Troy facility. There are no known tributaries in the area and the topography slopes uphill towards the pond. The River Rouge is located approximately 2.5 miles west of the facility. Run off from the facility drains to the municipal sewer system. Therefore, a direct surface-water discharge from the facility is unlikely.

No site-specific information about ground water was available. Information obtained during the PA/VSI indicates, however, that within a 3-mile radius of the site, ground water is not used for either drinking water or industrial purposes. Since Troy is located on a glacial lake plain, primarily of silts and clays, the area is not favorable for the development of wells of moderate-to-large yields. The silts and clay deposits under the site would reduce the potential for vertical movement of contaminants.

EXPLANATION

QUATERNARY		Lakebeds, sand and clay
		Moraines and till plains
		Water-worked deposits: boulders and reworked morainal material



0 10 20 MILES
0 10 20 KILOMETERS

Base from U.S. Geological Survey
1:500,000 map

BASF CORPORATION
TROY, MICHIGAN

FIGURE 5
SURFICIAL GLACIAL FEATURES
OF THE DETROIT RIVER AREA

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3.0 SOLID WASTE MANAGEMENT UNITS

This section describes the two SWMUs identified during the PA/VSI. The following information is presented for each SWMU: description of the unit, dates of operation, wastes managed, release controls, history of documented releases, and PRC observations.

SWMU 1

Satellite Accumulation Areas

Unit Description: Drums were located next to blending vessels in Building 1 to accumulate small volumes of wastes as they were generated. BASF Troy employees transferred full 55-gallon drums to the hazardous drum storage area (SWMU 2).

Date of Startup: Unknown.

Date of Closure: The unit ceased operation in 1986.

Wastes Managed: The drums in this area stored waste toluene diisocyanate (U223) and spent methylene chloride (F002). Nonhazardous polyol was also stored in drums in this area.

Release Controls: The walls and the floor of the building would have served as secondary containment.

History of Documented Releases: No releases of hazardous wastes or hazardous constituents from this unit were identified during the PA/VSI.

Observations: The inside of the building was closed and boarded up and was not observed at the time of the VSI.

SWMU 2

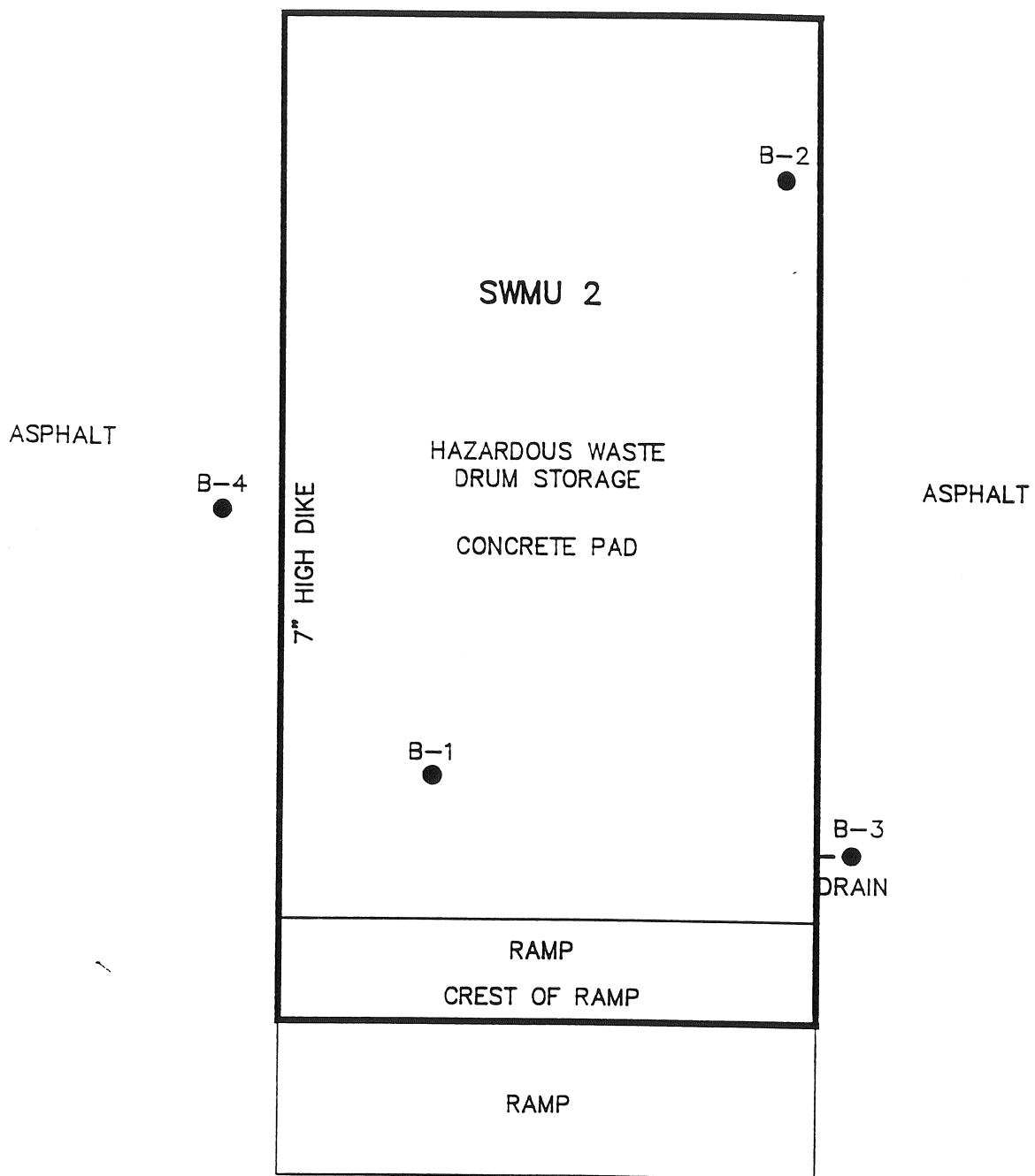
Hazardous Waste Drum Storage Area

Unit Description: The hazardous waste drum storage area was located in an asphalt-paved area north of Building 1, the main building. The unit consisted of a 6-inch concrete pad measuring 33 feet by 15 feet. The pad had a 7-inch berm around its boundaries. The pad also had a drain that led to the asphalt surface and was controlled by a manual valve. Figure 6 shows the layout of this unit and the locations of samples collected during closure. Photographs 1 and 2 of Attachment A depict this unit.

Date of Startup: The unit became operational in 1981.

Date of Closure: The unit ceased operation in 1986 and its closure was approved by MDNR in 1989.

Wastes Managed: The unit stored drums containing spent methylene chloride (F002), and waste toluene diisocyanate (U223).



LEGEND
● SOIL BORING

BASF-TROY FACILITY
TROY, MICHIGAN

FIGURE 6
DESCRIPTION OF SWMU 2

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BASF-TRY3.DWG - 01/08/92 - CFR

SOURCE: MODIFIED FROM BASF SKETCH, 1988

NOT TO SCALE

Release Controls: The unit consisted of a concrete pad and was surrounded by a 7-inch dike to contain spills. A 2-inch-diameter pipe and valve also were installed to drain accumulated rain water from the diked area. When the diked area was full of rain water, the water was discharged directly to the pavement and subsequently to the combined sewer system. Facility representatives indicated that the accumulated rain water was inspected visually before discharge to ensure that stored drums had not leaked (Hoermann, 1992).

History of

Documented Releases: No documented releases of hazardous waste or hazardous constituents from this unit were identified during the PA/VSI.

Observations: The pad was empty and appeared to be clean. The valve to the drain was dismantled. No evidence of drum storage or releases from the pad was observed.

4.0 AREAS OF CONCERN

PRC identified no AOCs during the PA/VSI.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The PA/VSI identified two SWMUs at the BASF Troy facility. Background information on the facility's location, operations, waste generating processes, release history, regulatory history, environmental setting, and receptors is presented in Section 2.0. SWMU-specific information, such as the unit's description, dates of operation, wastes managed, release controls, history of documented releases, and observed condition, is discussed in Section 3.0. AOCs are discussed in Section 4.0. Following are PRC's conclusions and recommendations for each SWMU. Table 3 identifies the SWMUs at the BASF Troy facility and any suggested further action.

SWMU 1 Satellite Accumulation Areas

Conclusions: The unit ceased operation in 1986 and all satellite accumulation drums have been removed. The building that contained satellite accumulation drums has remained vacant since 1986. The potential for releases of hazardous constituents to ground water, surface water, air, or on-site soils from this unit is low.

Recommendations: No further action is recommended at this time.

SWMU 2 Hazardous Waste Drum Storage Area

Conclusions: This unit ceased operation in 1986 and its closure was approved by MDNR in 1989. At the time of closure, an investigation conducted by a contractor, CEC, determined that the native soils under and near the storage pad area were not contaminated. Subsequently, the pad was decontaminated. The storage area has remained vacant since then. The potential for releases of hazardous constituents to ground water, surface water, air, or on-site soils from this unit is low.

Recommendations: No further action is recommended at this time.

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 DATE _____
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 INITIALS

ENFORCEMENT
CONFIDENTIAL

TABLE 3
SWMU SUMMARY

	SWMU	Operational Dates	Evidence of Release	Suggested Further Action
1.	Satellite Accumulation Areas	Unknown to 1986	None	No further action
2.	Hazardous Waste Drum Storage Area	1981 - 1986	None	No further action

RELEASED
DATE _____
RIN # _____
INITIALS WV

5/11/61

REFERENCES

- BASF, 1980a, Treatment, Storage, and Disposal Facility RCRA Part A Permit Application, November 17.
- BASF, 1980b, Closure Plan of Hazardous Waste Management Storage Facilities, November.
- BASF, 1983, First revision of the closure plan, March.
- BASF, 1985, Second revision of the closure plan, April.
- BASF, 1986a, Letter to MDNR to notify the closure of the facility, November, 6.
- BASF, 1986b, Letter to EPA Region 5 to notify the closure of the facility, November 6.
- BASF, 1988a, Third revision of the closure plan, April.
- BASF, 1988b, Final revision of the closure plan, June.
- BASF, 1989a, Certification statement of the closure of the hazardous waste container storage unit, February 2.
- BASF, 1989b, Letter to MDNR stating the closure plan as public record, February 7.
- CEC, 1988a, Letter to BASF Troy informing the corporation of the implementation plan for the closure of the drum storage pad area, December 20.
- CEC, 1988b, Certification of the drum storage pad closure from the professional engineer, Derek R. Wong, December 22.
- CEC, 1989a, Letter to MDNR responding to the deficiencies noted on January 19 by MDNR, January 30.
- CEC, 1989b, Certification of the drum storage pad closure from Derek R. Wong in response to the MDNR's letter dated January 19, January 30.
- DWSD, 1988, Approval of discharge of rinse wastewater to a sewer system, December 16.
- Federal Register*, 1990. Tabulated Values on Net Precipitation Factor, Volume 55, Number 24, page 51,600, December 14.
- Hoermann, 1992, Telephone Conversation between Tom Hoermann, BASF Troy, (313) 246-6550, and Dana Mun, PRC Environmental Management, Inc. (PRC), January 9.
- MDNR, 1981, Annual RCRA inspection report, September 17.
- MDNR, 1982, Annual RCRA inspection report, September 24.
- MDNR, 1983, Annual RCRA inspection report, July 25.

MNDR, 1985, Annual RCRA inspection report, October 14.

MDNR, 1988a, Approval letter of the closure plan for the hazardous waste storage unit of BASF Troy, with amendment, "Stipulations for Closure Plan Approval", August 12.

MDNR, 1988b, Letter sent to BASF Troy clarifying the "Stipulations for Closure Plan Approval," October 11.

MDNR, 1989a, Letter to BASF Troy citing deficiencies in the closure certification document submitted by CEC, January 19.

MDNR, 1989b, Letter to BASF Troy citing release from the requirements for financial assurance for closure of the hazardous waste drum storage area, February 23.

Mozola, Andrew J., 1953, "Survey of Groundwater of Resources, Oakland County, Michigan."

PRC, 1991, Visual Site Inspection, November 5.

Roberts, 1991, Telephone conversation between Bill Roberts, BASF Troy, 313-246-5244, and Dana Mun, PRC Environmental Management, Inc. (PRC), December 19.

U.S. EPA, 1989, A document which exempted BASF-Troy facility from filing the 1989 Hazardous Waste Report.

USGS, 1974, Map of flood-prone areas.

USGS, 1981, Topographic map, Birmingham quadrangle, Oakland County, Michigan.

U.S. Soil Conservation Service, 1981, Soil Survey of Oakland County, Michigan.

ATTACHMENT A
VISUAL SITE INSPECTION SUMMARY AND PHOTOGRAPHS

VISUAL SITE INSPECTION SUMMARY

BASF Corporation
Troy Michigan, Facility
Troy, Michigan
MID 057007478

Date: November 5, 1991

Facility Representatives: Bill Roberts (313) 246-5244
Tom Hoermann (313) 246-6550
Jim McGuire (313) 591-5577

Inspection Team: Tom Sinski, PRC Environmental Management, Inc. (703) 556-2811
Patricia Murphy, PRC Environmental Management, Inc. (703) 883-8869

Photographer: Patricia Murphy

Weather Conditions: Sunny and cold. Temperature, 30°F

Summary of Activities: The PRC representatives (PRC) arrived at the BASF Troy facility at approximately 9:50 a.m. They provided a brief overview of the purpose of the PA/VSI. PRC then accompanied three facility representatives on a tour of the facility. BASF Troy representatives explained their facility operations and answered questions posed by PRC. PRC observed the grounds of the facility and the former hazardous waste drum storage area. The operations building was closed and boarded up; no observations were made inside the building. Photographs taken by PRC during the VSI are presented on the following pages. The PRC team left the BASF Troy facility at approximately 10:40 a.m.



Photograph No. 1
Orientation: North
Description: Hazardous Waste Drum Storage Pad

Location: SWMU 1
Date: 11/5/91



Photograph No. 2
Orientation: Northwest
Description: Two-inch pipe and valve installed to manually drain accumulated rain water.

Location: SWMU 1
Date: 11/5/91

ATTACHMENT B
VISUAL SITE INSPECTION FIELD NOTES

11-5-98 Volume C. Kerpel

4:51	11/20/17
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Jim McGwire

1. 1. 1.

Agreement in 1171

71-1986

Moved materials to office

2 water - 1114thly 12 1114thly

DI - Making friends

$\frac{d}{dt} \ln \frac{V_{\text{eff}}}{V_{\text{eff}}^0} = -\frac{1}{V_{\text{eff}}^0} \frac{dV_{\text{eff}}}{dt}$

7. Verleiden en together - (can be)

steel & standards steel!

cellulose, 115, 116

Wichita

city and state. Last night.

60000 in 1900 110000 in 1910

plant. Product Chemicals

St. Ignace National and

C

Q

L

instruments for fuel bleeding purposes.

Not much waste was generated - occasionally from line purging. Neutralizer \approx 98 water, 5% ammonia, 5% detergent.

This was mixed up in a portable (250 gal) etc, went through venturiizer.

Clearup on rd above.

Use for emergency.

Generation of FI normally not known.

"Coastal" used for recovery.

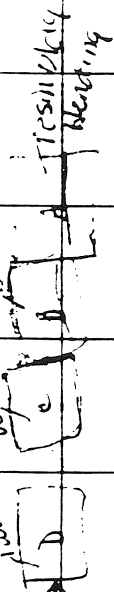
Methylene Chloride - stopped using.

it because of interference with

instruments and it tore up meters.

After that material was burned and shipped off-site.

with



DNV2

24,000 lbs of H₂O

Don't recall where the disposal of waste material was.

Oil separator was broken on

bleeding equipment (vessels).

Charged for standard maintenance

oil oil heating in D. ~~Aluminum~~ ^{the} ~~oil~~ ^{oil}

used for process heating

pumped thru pipes in jackets

to tanks. Reconnected thru system

never became upset completely

closed system.

Photo 1-4 early north business

front of plant

Photo 5 loading area (N)

Photo 1 (S) Learning classes,
 Chiller in cooling water
 Photo 7 - base of P (S)
 Photo 8 - base of (S)
 Photo 9 - base of (S)
 Storage pool ~ 4" (NW)
 Photo 10 - 3 sides
 Photo 11 - outlet in pool
 control chamber of there
 was a spill of water the
 contained.
 Lemnace Dry cleaning facility
 directly in base of pool
 (to north)
 To west open field w/ road.
 At city water, sewage, in canal

Photo 11 (S) area between (C & D)
 12 (S) packing
 Oil waste area for overflow
 tank
 Photo 13 (SW)
 Photo 14 Tank pool between (C & D)

Bins have a separate chamber for
 storage of waste at vessel
 after oil other chambers were used
 for storage of other

then manufacturing waste is
 incinerated.

10:40 completed site tour

11-5-91

~~Patricia A. Murphy~~

BASF

9:54 A.M. Sunny 30°F

Patti Murphy + Tom Lewis

Met with 3 BASF reps

Bill Robert
Tom

Tom MacLure

discussed July 1971,
Plans building / warehouse
systems for 1971

1971 to 10/1/86 when
moved to second
floors since 1986

storage
utility
south end
near Mary Rd
very much

up one
up to house
black
asphalt
4 x 9 ft

one
road

20:26 #101

(41) Tnd

Methylene Chloride used a
cleaning solvent.

TD it used to make
foam

1000 galbs - 4000 galbs
blending vessels (7 vessels
total) (made of carbon
steel or SS).

Storage Tanks for
resins.

Mixed and packaged
in drums or bulk in
tanks.

Waste resin sent off
for fuel blending.

(41) Tnd

Neutralizer used for cleanup.

NO Distillate tank burner.

Unknown how drums per
month shipped.

Methylene Chloride was
reclaimed during middle
stage of operation. But
reclaimed solution starting
distilling machine so
process was stopped
and they used fresh for
drums.

BEL (A.B.C.)

J. B. Bly total

Art B. 1/2 year #1 resin blending

B. bulk storage

L warehouse

L with 1/2 of system

(42) Feb

2nd 1000 FT² total.
Bldg D (40' x 110').

Unknown who picked up drums.

Routine maintenance lubricates
gear boxes and lighting oil.

Replaced every 6 months.
(pushed them 603)

Hot oil heating systems
used for process heating.
Pumped through jacketed
tanks.

Totally closed system
never spent.

BA5F still owns
property.

(43) Feb

Loading dock on East. 5' over
beam around parking lot.

Walter used an auto wash
going into 7 vehicles.

Diesel storage tank
located in 1915

Facility is surrounded by
fence with no entry.

Valve on steam and gas
lines under drained.

They installed by means to
with.

(Worked 1400R).

194 7/11/2

Whole area is in city (District
works & sewage (from McHouse).

Work of bldg is (500 in yellow)
check for dirt and stronga.

Seismic drum at each
vessel.

Wittland / storm water retention
pond is west, across the
street.

McHouse moved to west.

45 12/10

15E concluded at 10:44 a.m.

